



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,702	08/04/2000	HIDEYOSHI HORIMAI	106357	8307

25944 7590 02/28/2003

OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320

EXAMINER
----------

LAVARIAS, ARNEL C

ART UNIT	PAPER NUMBER
----------	--------------

2872

DATE MAILED: 02/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Arnel

Applicant(s)  
HORIMAI, HIDEYOSHI

Art Unit  
2872

correspondence address --

-- The MAILING DATE of this communication appears in the period for Reply

## A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ON THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of the period for reply specified above will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period for reply will, by statute, cause the application to become ABANDONED.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED.
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely received, will not be considered timely.

### Status

- 2b) ☒ This action is non-final.
- 1) ☒ Responsive to communication(s) filed on 10 October 2002.
- 2a) ☐ This action is FINAL.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 6-8, 16, 17 and 51-95 is/are pending in the application.
- 4a) Of the above claim(s) 61-78 and 86-95 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6-8, 16, 17, 51-60 and 79-85 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.

- 4) ☒ Interview Summary (PTO-413) Paper No(s). 1
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Office Action Summary

Application/Control Number: 09/601,702  
Art Unit: 2872

### **DETAILED ACTION**

#### ***Response to Amendment***

1. The cancellation of Claims 3-5, 9-15, 18-50 in Paper No. 18, dated 12/26/02, is acknowledged and accepted.
2. The addition of Claims 61-95 in Paper No. 18, dated 12/26/02, is acknowledged and accepted.
3. The amendments to the abstract in Paper No. 16, dated 10/10/02, are acknowledged and accepted.
4. The amendments to the specification of the disclosure in Paper No. 16, dated 10/10/02, are acknowledged and accepted.
5. The declaration under 37 CFR 1.132 filed in Paper No. 15, dated 10/10/02, is sufficient to overcome the rejection of Claims 1-2, 6-8, 16-17 in Paper No. 10, dated 5/10/02, based upon U.S. Patent No. 5917798 to Horimai et al.

#### ***Election/Restrictions***

6. After careful consideration and further discussion with Applicant's representatives, Paul Tsou and Phillip D. Mancini, the previous restriction requirement in Paper No. 17, dated 11/25/02, has been respectfully withdrawn.
7. As per the interview with Applicant's representative (See Paper No. 12, dated 10/3/02), a new restriction requirement is set forth below, taking into consideration the amendments and proposed claim groupings as submitted by Applicant in Paper No. 18,

Application/Control Number: 09/601,702  
Art Unit: 2872

Page 3

dated 12/26/02 and discussions in the interview summary, No. 19, conducted 2/19/03.

8.

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 1.2.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, Claim(s) 61-69, drawn to optical recording/reproducing apparatus with position controlling means for controlling position of recording light relative to the rotating recording medium so light follows motion of the medium (Servo maintains same position on medium).

Group II, Claim(s) 70-74, drawn to optical recording apparatus with optical rotation means for rotating the polarization directions of the information and reference lights by predetermined angle on the same optical axis and verification means (DRAW and Verify).

Group III, Claim(s) 75-78, drawn to recording and reproducing apparatus with pick up device and light source emitting beams of light in a plurality of wavelength bands (Plural wavelength bands).

Group IV, Claim(s) 79-85, drawn to redundant multiplex recording of plural information on the same location (Redundant multiplex recording).

Group V, Claim(s) 86-90, drawn to optical path separating and re-composing configuration for recording and reproducing apparatus with collinear information and reference lights (Optical path for collinear lights).

Group VI, claim(s) 91-95, drawn to double layered recording medium capable of recording separate information in the same location (Optical recording medium).

9. Claims 1-2, 6-8, 16-17, 51-60 link(s) the inventions of Groups I-V. The restriction requirement among the linked inventions is subject to the nonallowance of the linking claim(s), Claims 1-2, 6-8, 16-17, 51-60. Upon the allowance of the linking claim(s), the

Art Unit: 2872

restriction requirement as to the linked inventions shall be withdrawn and any claim(s) depending from or otherwise including all the limitations of the allowable linking claim(s) will be entitled to examination in the instant application. Applicant(s) are advised that if any such claim(s) depending from or including all the limitations of the allowable linking claim(s) is/are presented in a continuation or divisional application, the claims of the continuation or divisional application may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Where a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

10. The inventions listed as Groups I-VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group I has multiple special technical features directed toward, for example, positioning control and positioning regions that are not required for the other groups. Group II has special technical features directed toward polarization rotation means that is not required for the other groups. Group III has multiple special technical features directed toward, for example, light emitting sources with plural wavelength bands that are not required for the other groups. Group IV has multiple special technical features directed toward, for example, phase modulation means that are not required for the other groups. Group V has multiple special technical features directed toward, for example, collinear information and reference light means that are not required for the other groups. Group VI has

Application/Control Number: 09/601,702  
 Art Unit: 2872

special technical features directed toward a holographic recording medium with multiple information layers that is not required for the other groups.

11. During a telephone conversation with Phillip D. Mancini (703-836-6400) on 2/19/03 a provisional election was made without traverse to prosecute the invention of Group IV, Claims 79-85. Affirmation of this election must be made by applicant in replying to this Office action. Claims 61-78, 86-95 are withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### *Double Patenting*

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 51-60 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-2, 6, 8-10, 13-14 of U.S. Patent No. 5917798 to Horimai et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because Horimai et al. similarly discloses an optical information recording/reproducing apparatus comprising an information light

Application/Control Number: 09/601,702  
Art Unit: 2872

generator (See Claim 1, lines 5-6 for example), recording reference light generator that modulates a second light to generate a reference light based on second information (See Claim 1, lines 7-10 for example), a recording optical system (See Claim 1, lines 11-19 for example), a position controller (See Claim 2, lines 6-10), the recording reference light generator includes one or more of spatially modulating the second light and phase modulating the second light to generate the reference light (See Claim 1, lines 7-10), and the reference light generator modulating the light in substantially a same way that a recording reference light was modulated with the information was recorded (See Claim 9, lines 1-5 for example).

14. Claims 1-2, 6-8 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-2, 6, 8-10, 13-14 of U.S. Patent No. 5917798 to Horimai et al. in view of Burchardt (U.S. Patent No. 3573362).

Horimai et al. similarly discloses an optical information recording/reproducing apparatus comprising an information light generator (See Claim 1, lines 5-6 for example), recording reference light generator that modulates a second light to generate a reference light based on second information (See Claim 1, lines 7-10 for example), a recording optical system (See Claim 1, lines 11-19 for example), a position controller (See Claim 2, lines 6-10), positioning regions (See Claim 2, lines 2-5 for example), the recording reference light generator includes one or more of spatially modulating the second light and phase modulating the second light to generate the reference light (See Claim 1, lines 7-10), and the reference light generator modulating the light in substantially a same way that a recording reference light was modulated with the information was recorded (See

Claim 9, lines 1-5 for example). However, Horimai et al. lacks the recording reference light generation means including phase modulation means for spatially varying the phase of light. However, Burchardt teaches an optical information recording apparatus for recording information (See Figures 3A, 5, 9) in an optical recording medium having an information recording layer in which information is recorded utilizing holography (See 42 in Figure 3A for example) comprising recording reference light generation means including phase modulation means (See 35, 36, 37, 37' in Figure 3A for example). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the recording reference light generation means including phase modulation means for spatially varying the phase of light for the purpose of increasing the storage density of the storage medium via phase multiplexing.

15. Claims 16-17, 79-80, 82 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-2, 6, 8-10, 13-14 of U.S. Patent No. 5917798 to Horimai et al. in view of Burchardt (U.S. Patent No. 3573362) and Liu et al. (U.S. Patent No. 6272095).

Horimai et al. similarly discloses an optical information recording/reproducing apparatus comprising an information light generator (See Claim 1, lines 5-6 for example), recording reference light generator that modulates a second light to generate a reference light based on second information (See Claim 1, lines 7-10 for example), a recording optical system (See Claim 1, lines 11-19 for example), a position controller (See Claim 2, lines 6-10), positioning regions (See Claim 2, lines 2-5 for example), the recording reference light generator includes one or more of spatially modulating the second light



Application/Control Number: 09/601,702

Art Unit: 2872

and phase modulating the second light to generate the reference light (See Claim 1, lines 7-10), and the reference light generator modulating the light in substantially a same way that a recording reference light was modulated with the information was recorded (See Claim 9, lines 1-5 for example). However, Horimai et al. lacks the recording reference light generation means including phase modulation means for spatially varying the phase of light and a wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths, information light generation means generating plural information lights, and the apparatus performing wavelength and spatial multiplexing. However, Burchardt teaches an optical information recording apparatus for recording information (See Figures 3A, 5, 9) in an optical recording medium having an information recording layer in which information is recorded utilizing holography (See 42 in Figure 3A for example) comprising recording reference light generation means including phase modulation means (See 35, 36, 37, 37' in Figure 3A for example) and information light generation means generating plural information lights (it is noted that the plural information lights of Burchardt occur temporally as a function of time, i.e. each pulse generated by 31 occurs sequentially in time). Liu et al. teaches an apparatus and method for storing and/or reading data on an optical disk by holographic means (See Figures 1-2, 4-6, 8-10, 13, 18; col. 3, line 7-col. 6, line 27; col. 18, line 42-col. 19, line 51) comprising wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths (See col. 18, line 20-col. 20, line 52) and the apparatus performing wavelength and spatial multiplexing (See for example Figure 3; col. 20, lines

Application/Control Number: 09/601,702  
Art Unit: 2872

13-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the recording reference light generation means including phase modulation means for spatially varying the phase of light and having wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths for the purpose of increasing the storage density of the storage medium via phase, wavelength, and/or spatial multiplexing.

16. Claims 81, 83-85 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 1-2, 6, 8-10, 13-14 of U.S. Patent No. 5917798 to Horimai et al in view of Burchardt (U.S. Patent No. 3573362) and Liu et al. (U.S. Patent No. 6272095) and further in view of Reid et al. (U.S. Patent No. 4213193).

Horimai et al. in view of Burchardt and Liu et al. similarly discloses an optical information recording/reproducing apparatus comprising an information light generator (See Claim 1, lines 5-6 of Horimai et al. for example), recording reference light generator that modulates a second light to generate a reference light based on second information (See Claim 1, lines 7-10 of Horimai et al. for example), a recording optical system (See Claim 1, lines 11-19 of Horimai et al. for example), a position controller (See Claim 2, lines 6-10 of Horimai et al.), positioning regions (See Claim 2, lines 2-5 of Horimai et al. for example), the recording reference light generator includes one or more of spatially modulating the second light and phase modulating the second light to generate the reference light (See Claim 1, lines 7-10 of Horimai et al.), and the reference light

generator modulating the light in substantially a same way that a recording reference light was modulated with the information was recorded (See Claim 9, lines 1-5 of Horimai et al. for example). Burchardt discloses the recording reference light generation means including phase modulation means for spatially varying the phase of light, and Liu et al. discloses a wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths, information light generation means generating plural information lights, and the apparatus performing wavelength and spatial multiplexing. Horimai et al. in view of Burchardt and Liu et al. lacks a parity generation unit and the optical recording unit recording a same interference pattern on plural locations on the optical information recording medium. However, Reid et al. teaches a conventional recording and reproducing apparatus, particularly suited for holography (See Figure 1). Reid et al. additionally discloses particular locations on the storage medium including block and parity bits for providing information on identification, location, and data parity of any particular data page in one of the plural hologram data tracks (See Figure 8; col. 6, lines 14-49). Such parity and block bits are generated prior or during holographic data recording (See col. 6, lines 21-30) by a generation unit (although not specifically disclosed, such a unit is required to produce such parity and block bit data). It is noted in particular that such a holographic recording and reproducing apparatus provides data redundancy (See col. 1, lines 13-40) wherein such data, whether parity data, block data, or actual holographic data, is recorded multiple times, either in the same location or in multiple locations on the storage medium. Therefore, it would have been obvious to one having ordinary skill in the art to have the

optical recording unit record the same interference pattern on plural locations on the optical information recording medium, as taught by Reid et al., in the optical information recording apparatus of Burchardt in view of Liu et al. for the purpose of providing data redundancy and decreasing data retrieval access times.

***Claim Rejections - 35 USC § 102***

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. Claims 1, 6, 51, 53-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Burchardt (U.S. Patent No. 3573362).

Burchardt discloses an optical information recording apparatus for recording information (See Figures 3A, 5, 9) in an optical recording medium having an information recording layer in which information is recorded utilizing holography (See 42 in Figure 3A for example), the apparatus comprising information light generation means (See 31, 32, 33, 34 in Figure 3A for example); recording reference light generation means including phase modulation means (See 35, 36, 37, 37' in Figure 3A for example); and a recording optical system for illuminating the information recording layer on the same side thereof with the information light generated by the light generation means and the reference light (See 38, 39, 40, 41 in Figure 1 for example).

*Claim Rejections - 35 USC § 103*

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 7, 16, 56-60, 79-80, 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burchardt in view of Liu et al. (U.S. Patent No. 6272095).

Burchardt discloses the invention as set forth above. Additionally, Burchardt discloses an optical information reproduction apparatus for reproducing information utilizing holography (See Figures 3A, 4, 5, 9; col. 9, lines 17-28) from an optical information recording medium having an information recording layer (See 423 in Figure 4), and information light generation means generating plural information lights (it is noted that the plural information lights of Burchardt occur temporally as a function of time, i.e. each pulse generated by 31 occurs sequentially in time). It is noted that the apparatus shown in Figures 3A, 5, and 9 may be similarly used to reproduce the recorded holograms by, for example, turning off the light source 31 during reproduction and utilizing the same phase modulation plate 37, 37' used to record the hologram. Burchardt lacks the particulars of a reproducing optical system for illuminating the information recording layer with the reference light and for collecting reproduction light generated at the information recording layer and a detection means for detecting the reproduction light collected by the reproducing optical system. Burchardt additionally lacks wavelength

selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths and the optical unit performing spatial multiplexing. However, Liu et al. teaches an apparatus and method for storing and/or reading data on an optical disk by holographic means (See Figures 1-2, 4-6, 8-10, 13, 18; col. 3, line 7-col. 6, line 27; col. 18, line 42-col. 19, line 51). In particular, Liu et al. teaches the reproduction reference light generation means (See 104, 106 in Figure 4 for example); a reproducing optical system for illuminating the information recording layer with the reference light and for collecting reproduction light generated at the information recording layer (See 110, 120 in Figure 4 for example); and detection means for detecting the reproduction light collected by the reproducing optical system (See 132, 130, 124 in Figure 4 for example). Liu et al. additionally teaches wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths (See col. 18, line 20-col. 20, line 52) and the apparatus performing wavelength and spatial multiplexing (See for example Figure 3; col. 20, lines 13-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the apparatus and method for storing and/or reading data on an optical disk by holographic means include the particulars of a reproducing optical system for illuminating the information recording layer with the reference light and for collecting reproduction light generated at the information recording layer and a detection means for detecting the reproduction light collected by the reproducing optical system and also to include wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among

a plurality of wavelengths, as taught by Liu et al. One would have been motivated to do this to take advantage of existing, mature, and low-cost drive mechanisms and electronics found in conventional CD-ROM drives, which are easily modified to operate the above optical reproduction system. One would have been motivated to include wavelength selection means and spatial/wavelength multiplexing to increase the storage density of the recording medium, as well as reducing cross talk noise.

21. Claims 2, 8, 17, 52, 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burchardt in view of Liu et al. as applied to Claims 1, 6, 7, 16, 51, 54, 56, 59 above, and further in view of van Rosmalen (U.S. Patent No. 4638471), Reid et al. (U.S. Patent No. 4213193), or Hays et al. (U.S. Patent No. 5777760).

Burchardt in view of Liu et al. discloses the invention as set forth above in Claims 1, 6-7, and 16 above, except for the optical information recording medium having a positioning region, and the apparatus further comprising position control means. However, van Rosmalen, Reid et al., and Hays et al. all disclose various optical recording and reproducing apparatus that utilize a recording medium having a positioning region, and the apparatus further comprising a position control means. van Rosmalen teaches a conventional recording and reproducing apparatus (See Figure 1) wherein the record carrier includes locations having signal information, as well as information on position of the scanning spot relative to the information track (See col. 5, lines 1-20). Reid et al. similarly discloses a conventional recording and reproducing apparatus, particularly suited for holography (See Figure 1) wherein particular locations on the storage medium include block bits for providing information on identification and

location of any particular data page in one of the plural hologram data tracks (See Figure 8; col. 6, lines 14-49). This data is used in conjunction with a controller means (See 46 in Figure 1; col. 5, line 38-col. 6, line 13). Hays et al. teaches a position feedback system for a volume holographic storage medium (See Figure 10) wherein a plurality of servo blocks are recorded on the storage medium to provide position information to position control means, such as a voice coil motor (See Figure 2; abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the optical information recording medium having a positioning region, and the apparatus further comprising position control means, as taught by van Rosmalen, Reid et al., and Hays et al., for the purpose of improving storage capacity and reducing cross-talk noise.

22. Claim 81, 83-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burchardt in view of Liu et al. as applied to Claim 79 above, and further in view of Reid et al.

Burchardt in view of Liu et al. discloses the invention as set forth above, except for a parity generation unit and the optical recording unit recording a same interference pattern on plural locations on the optical information recording medium. However, Reid et al. teaches a conventional recording and reproducing apparatus, particularly suited for holography (See Figure 1). Reid et al. additionally discloses particular locations on the storage medium including block and parity bits for providing information on identification, location, and data parity of any particular data page in one of the plural hologram data tracks (See Figure 8; col. 6, lines 14-49). Such parity and block bits are



generated prior or during holographic data recording (See col. 6, lines 21-30) by a generation unit (although not specifically disclosed, such a unit is required to produce such parity and block bit data). It is noted in particular that such a holographic recording and reproducing apparatus provides data redundancy (See col. 1, lines 13-40) wherein such data, whether parity data, block data, or actual holographic data, is recorded multiple times, either in the same location or in multiple locations on the storage medium. Therefore, it would have been obvious to one having ordinary skill in the art to have the optical recording unit record the same interference pattern on plural locations on the optical information recording medium, as taught by Reid et al., in the optical information recording apparatus of Burchardt in view of Liu et al. for the purpose of providing data redundancy and decreasing data retrieval access times.

### *Conclusion*

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Art Unit: 2872

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias  
February 24, 2003



Cassandra Spyrou  
Supervisory Patent Examiner  
Technology Center 2800